AI Washing

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Summary

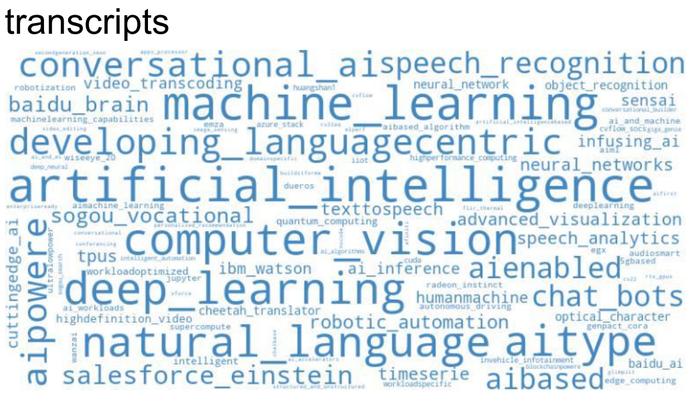
- **AI Washing**: the exaggeration or misrepresentation of corporate investment in artificial intelligence (AI)
- Using large language models (LLMs), develop novel measures for U.S. public firms from 2016 to 2024 of
  - AI Talk: *forward-looking in-house AI investment plans* from earnings call transcripts
  - AI Walk: *AI-related workforce expertise* from employee resumes
- Within firms, past talk does ***not*** predict future AI-skilled workforce; suggestive evidence of AI washing
- Short-run market reward to talk reverses in the long run; walk yields large, persistent gains over longer horizons
- Managerial myopia motivates AI washing

Data

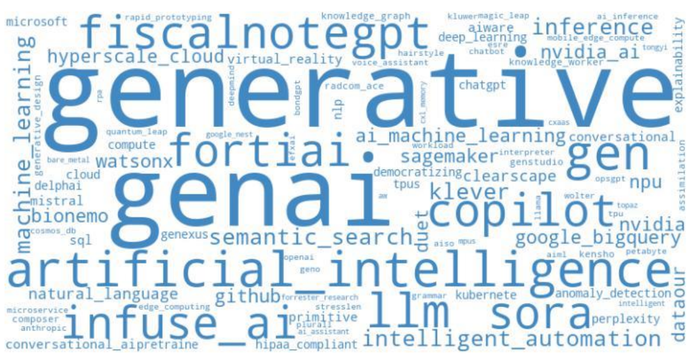
- Earnings call transcripts (2016 Q1–2024 Q2, Capital IQ) → AI Talk
- Detailed employee resume data (Revelio Labs) → AI Walk
- Institutional Holdings (CRSP Mutual Fund Database)
- Further exclude firms in the technology sector, with < 100 employee profiles, and never talk
  ➔ 20,135 firm-quarter observations from 721 unique U.S. public firms

Methodology

To capture the evolving nature of AI, build annual AI dictionaries with **time-varying *Word2Vec*** based on conference call transcripts



2019



2024

Apply LLMs to further classify firms' discussions and job descriptions containing any AI-related keywords, retaining only

- **forward-looking** talk related to **in-house** AI development (AI Talk)
- roles contributing to **in-house** AI development (AI Walk)

$$AI\ Talk_{i,t} = \frac{\sum_{k=1}^{K} Similarity\ Score_{i,t,k} \times AI\text{-}related\ Keyword\ Occurrence_{i,t,k}}{Total\ Number\ of\ Words_{i,t}} \times 100$$

$$AI\ Walk_{i,t} = \frac{Number\ of\ Active\ AI\text{-}related\ Positions_{i,t}}{Number\ of\ All\ Active\ Positions\ with\ Descriptions_{i,t-1}} \times 100$$

Validation: Walk strongly predicts future AI patents (quantity, value, citations), whereas Talk does not.

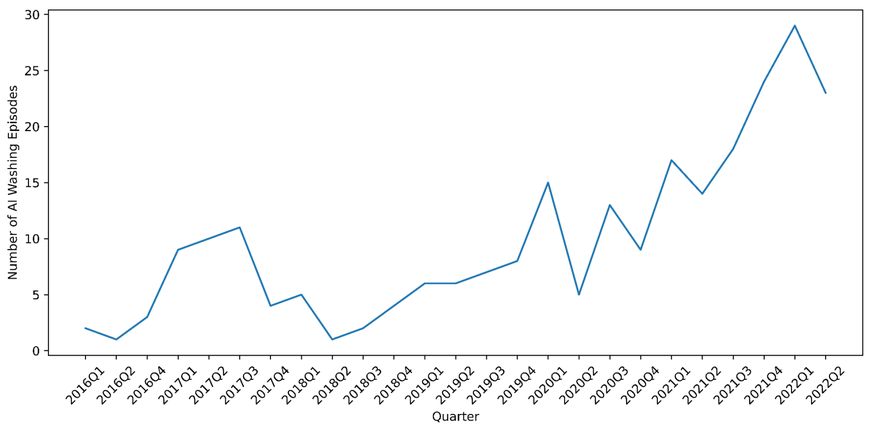
AI Talk-Walk Gap

	Dependent Variable: AI Walk$_t$	
Variable	(1)	(2)
Talk$_{t-1}$	0.0340	0.0047
	(0.0210)	(0.0033)
Talk$_{t-2}$	0.0487**	0.0023
	(0.0201)	(0.0026)
Talk$_{t-3}$	0.0572**	-0.0019
	(0.0263)	(0.0043)
Talk$_{t-4}$	0.1127**	-0.0022
	(0.0479)	(0.0076)
Talk$_{t-5}$	0.1039**	-0.0040
	(0.0455)	(0.0065)
Talk$_{t-6}$	0.1031**	-0.0024
	(0.0438)	(0.0064)
Talk$_{t-7}$	0.0992**	0.0031
	(0.0435)	(0.0059)
Talk$_{t-8}$	0.1159**	0.0025
	(0.0525)	(0.0051)
Controls	Y	Y
Firm FE	N	Y
Industry-Quarter FE	Y	Y
Adj R^2	0.269	0.931
Observations	13,598	13,593

- **Cross-sectional association**: Without firm fixed effects, firms that talk more about AI also tend to expand their AI-related workforce, reflecting that larger, more established, and better-capitalized firms both "talk" and "walk" on AI
- **Within-firm dynamics**: Once firm fixed effects are included, **past AI talk no longer predicts future AI walk**, suggesting that the apparent relationship is largely driven by persistent firm characteristics (e.g., size, age, R&D intensity) rather than true within-firm dynamics
- This Talk-Walk gap is emerging **post-2019**

AI Washing

- AI Washing Incidents: talk with zero follow-up AI hiring throughout the subsequent two years ➔ 246 incidents from 2016 Q1 to 2022 Q2



- AI washing concentrated in the manufacturing industry
- Smaller and less capital-intensive firms are more likely to engage in AI washing

Market Reactions

Variable	(1) 3-day CAR$_t$	(2) 6-month BHAR$_t$	(3) 9-month BHAR$_t$	(4) 12-month BHAR$_t$
Talk$_t$	0.212***	0.220	-0.254	-1.852***
	(0.077)	(0.360)	(0.566)	(0.661)
Walk$_{t-1}$	-0.314	3.725**	6.142**	9.337**
	(0.343)	(1.844)	(3.114)	(4.688)
Controls	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Industry-Quarter FE	Y	Y	Y	Y
Adj. R^2	0.036	0.217	0.281	0.330
Observations	17,659	17,127	16,464	15,397

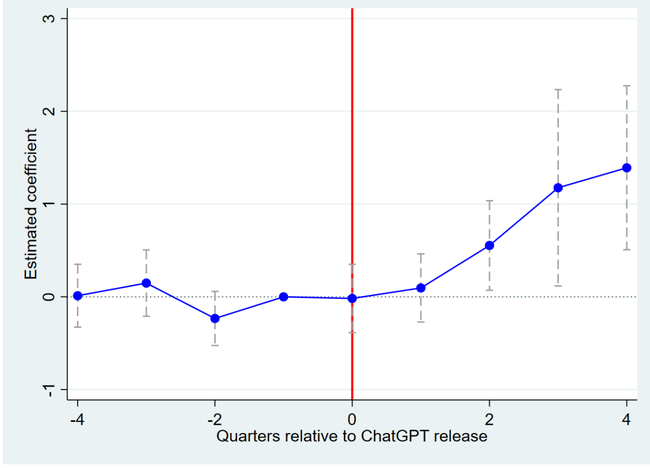
- **Short Run (3-day CARs):**
  - AI talk boosts short-term returns (+0.2% per 1 s.d. increase in AI talk)
  - AI walk shows no immediate effect
  - Investors reward rhetoric over substance in the short term
- **Long Run (6–12 months BHARs):**
  - Gains from AI talk fade and reverse within one year (to –1.9%)
  - AI walk drives large, persistent gains (+9.3% in 12 months per 1 s.d. of walk)
  - Markets penalize cheap talk but reward real AI investment

Managerial Incentives

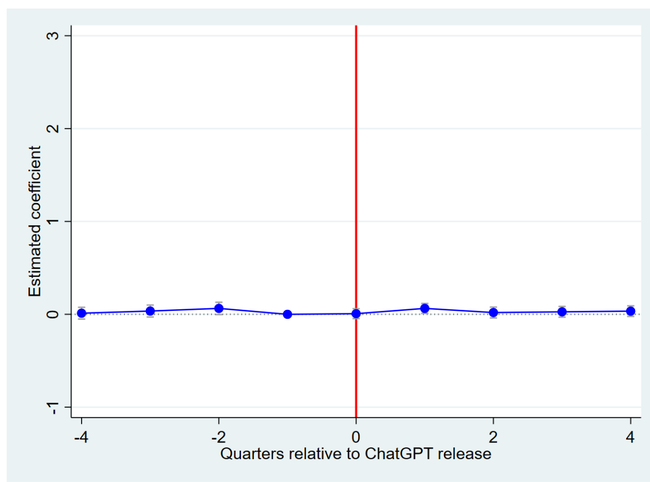
Are managers with high pay-for-performance sensitivity more likely to inflate AI talk after ChatGPT release?

$$Y_{i,t} = \alpha + \beta_1(Post_t \times HighDelta_i) + \gamma \mathbf{X}_{i,t} + \alpha_{firm} + \lambda_{industry\text{-}quarter} + \varepsilon_{i,t}$$

- Post = 1 for quarters after ChatGPT launch (i.e., 2022 Q4 and onward)
- High Delta= 1 for firms with CEO delta in the top quintile



AI Talk



AI Walk

- AI Talk begins to increase significantly two quarters after ChatGPT release for high-per-for-performance managers
- This increase in AI talk is not matched by a corresponding increase in AI hirings

In another test: At earnings calls occurring within one week of an upcoming seasoned equity offering, firms sharply increase AI talk without raising AI walk, and the market rewards this rhetoric ~7 × more than in non-SEO periods — evidence of opportunistic narrative management rather than genuine AI investment

Conclusion

- Novel talk and walk measures using LLMs
- Suggestive evidence of AI washing: firms' AI talk ***not*** backed by workforce investment
- Market rewards rhetoric short-term but penalizes it long-term; substantive AI hiring yields large and persistent gains over longer horizons
- Managerial myopia motivates AI washing
- Growing disconnect between AI rhetoric and real investment, reflecting tension between ***short-term market incentives*** and ***long-term value creation***

Questions or comments? Let's get in touch!
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